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## CHAPTER 3

### A New Look at Army Modernization: Keeping Pace With a Changing Force

Based on its Vision, the Army is revising its modernization strategy to support the transformation to the Objective Force. The Army will develop the enhanced capabilities of the Objective Force by combining the integration of information technologies that have been part of Army modernization programs for several years with advanced S&T still under development. The effort to integrate information technologies, known as digitization, greatly enhances unit effectiveness. Anticipating this enhanced capability, the Army has redesigned its mechanized divisions. This redesign, to be implemented over the next few years, makes mechanized divisions more deployable by reducing their size, yet maintains their current lethality. In addition to these continuing efforts, the Army has made significant adjustments to its modernization strategy.

Planned adjustments to the Army modernization strategy include acceleration of a number of programs

designed to improve strategic responsiveness and increase the lethality of light forces. Acceleration of logistical command and control systems and software will expedite the deployment and support of Army units by making it easier to prepare and execute movement plans, by ensuring integration with joint logistical systems, and by providing the ability to track shipments in transit. Efforts to improve light force lethality include anti-armor systems and indirect fire systems.

Since much of the technology to provide Objective Force capabilities is still under development, the Army will guide S&T efforts until it becomes possible to acquire systems that will give desired characteristics to the force. The FCS program will develop systems far lighter than today's combat vehicles with improved capabilities. In all of its modernization efforts, the Army strives to sustain interoperability between the AC and RC as well as with other Services and allied forces.

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## The Army Vision and Force Modernization

As described in the previous chapter, the Army is implementing a strategy to transform itself into the Objective Force—a force that will embody the mobility and decisive warfighting capabilities of today’s mechanized forces as well as the strategic responsiveness of today’s light forces. The redesign of initial Brigade Combat Teams at Fort Lewis, Washington, will begin with surrogate equipment. These initial Brigade Combat Teams will validate the organizational and operational features and requirements for future tactical units. Based on the

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initial Brigade Combat Team-validated structure, the Army will field the Interim Force: a force with the characteristics of the Objective Force but within the constraints of available equipment. The surrogate and loaned equipment used to equip the initial Brigade Combat Teams will be replaced by the IAV, a yet-to-be-selected, off-the-shelf system which the Army will begin procuring in FY2000.

The IAV will be used to equip Interim Force units until the Army is ready to begin fielding the Objective Force.

The Army will develop the enhanced capabilities of the Objective Force and the Interim Force by harnessing the power of information technologies that have been part of Army modernization programs for several years. Through a process called Force XXI, the integration of these technologies into combat and supporting systems—a broad effort referred to as digitization—is well on the way to realizing tremendous advances in warfighting effectiveness. The Army has capitalized on this increased effectiveness by creating Division XXI: a new design for mechanized formations that makes them more lethal and survivable by incorporating information technologies that provide near real-time situational awareness. In turn, increased effectiveness enables reduction of the number of combat vehicles in the division, which improves the deployability of the unit. A parallel effort to enhance light force capabilities through application of information technologies is also underway.

The Army will remain ready to provide decisive land component capabilities in support of the NSS and NMS throughout its transformation to the Objective Force. Therefore, transformation leverages recent advances to retain today’s decisiveness through selected modernization and digitization enhancements, along with essential recapitalization, for mechanized and light forces. This chapter outlines these elements of Army modernization planning that support the transformation.

At the same time, since the S&T underpinnings for the Objective Force are still under development, the characteristics of the Objective Force

will guide the development of future systems. It is premature to discuss these systems in detail. Some noteworthy efforts to develop future capabilities merit a brief discussion at the end of this chapter.

The Army is focused on its transformation goal: the Objective Force. To reach this goal, the strategy continues selected elements of the Force XXI process in order to retain decisive capabilities. At the same time, the development of the Interim Force will provide a parallel capability that embodies Objective Force characteristics within the constraints of available and emerging technology. When technology permits, and with the support of the Nation’s leadership, the Army will complete its transformation to the Objective Force.

### Force XXI

During this transformation, the continuation of the Force XXI process is vital to sustain the capabilities of current forces and minimize the cost of operating equipment. The Force XXI process leverages the power of information age technology through a series of experiments ranging from large-scale Advanced Warfighting Experiments (AWE) to smaller-scale efforts focused on particular functional areas. The lessons gleaned from these experiments compress the development cycle for new systems and inform changes to organizational structure, training, and doctrine. Recent experiments have charted the course for digitizing mechanized forces. The Army will continue to capitalize on the lessons generated by the Force XXI process to integrate information age capabilities in mechanized forces through implementation of the Division XXI design, selected fielding of already-programmed systems with essential

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capabilities, and re-capitalization of existing systems.

Force XXI also seeks improvements in the tactical mobility, survivability, and lethality of light forces. The objectives of this effort are to improve the effectiveness and efficiency of joint command, control, communications, computers, and intelligence; to enhance contingency force operations in urban

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Division XXI is a new design for mechanized formations that makes them more lethal and survivable by incorporating information technologies that provide near real-time situational awareness.

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terrain; and, to improve the capability to conduct early entry operations.

Moreover, this effort is integrated fully with Joint Forces Command's program for future warfighting concept development. The 10th Mountain Division (Light Infantry) will participate in a Joint Contingency Force—Advanced Warfighter Experiment (JCF-AWE) in September 2000, to test ways of improving contingency force capabilities.

For both mechanized and light

forces, the Force XXI process is the vehicle for harnessing information technologies and lethality enhancements to achieve a revolutionary advance in effectiveness. The Division XXI design and the impending fielding of digitized divisions is the result of this process for mechanized forces. The process for light forces is less mature, but promises increased lethality and versatility. In sum, Force XXI will improve the capabilities of current forces, while integrating technologies that will support interoperability during the transformation.

#### Division XXI

Some mechanized units have already begun a transition to the Division XXI design. This transition from the Army of Excellence design to the new Division XXI design is predicated on the enhanced capabilities digitized platforms will bring to the division. Consequently, the new division will employ fewer combat systems while leveraging information and communications technology to provide shared situational awareness and increase effectiveness. The 4th ID (M) (-) at Fort Hood, Texas, is currently undergoing conversion to the new design as it becomes the Army's First Digitized Division (FDD). Digital systems will be fielded by the end of calendar year 2000, and the division will undergo a capstone exercise in 2001 to validate the capabilities of the FDD. The 1st Cavalry Division will become the Second Digitized Division by converting one brigade combat team to the new design each year from FY2001 to FY2003.

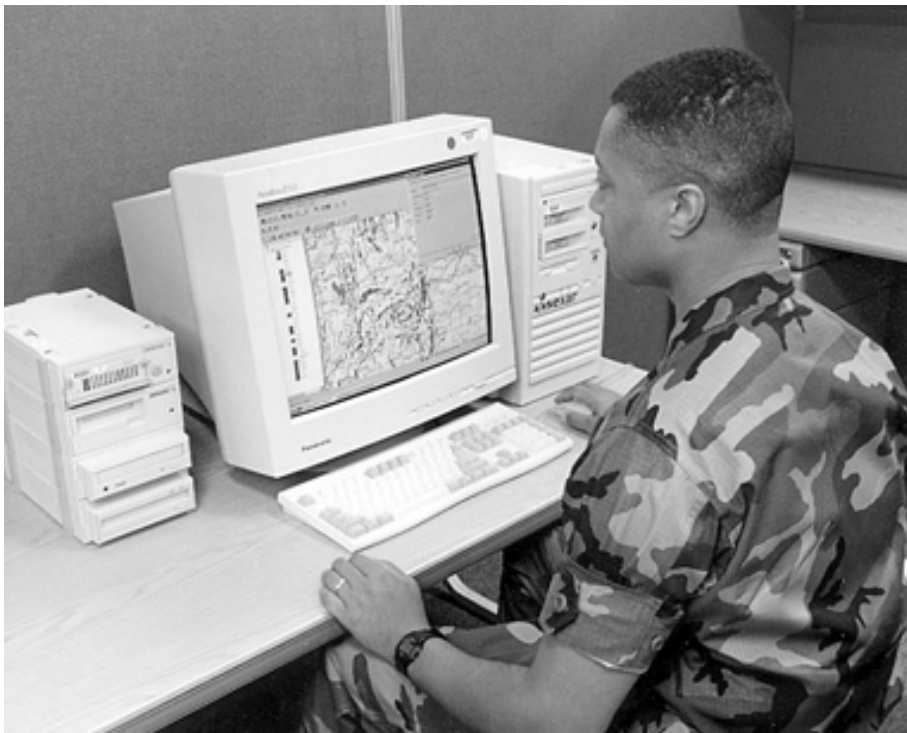
Key features of this new design include a reduction in the number of tanks and infantry fighting vehicles in mechanized battalions from 58 to 45 and an increase of almost 50 percent in the number of soldiers in infantry platoons.

Division XXI also features a reconnaissance troop in each ground maneuver brigade and a battalion of multiple launch rocket systems (MLRS) at division level. The total number of people in the armor division will decrease from 17,832 to 15,593, while in the infantry division it will decrease from 18,069 to 15,812. The new design will take several years to implement, but it will reduce the strategic lift requirement for affected divisions by 11 percent.

Some divisions will complete a limited conversion to the new design before they receive digital systems. 1st ID (M) (-) in Germany began a limited conversion to the new design in FY1999. The rest of the AC mechanized divisions, except 2d ID in Korea, will complete limited conversions in FY2001. The ARNG mechanized forces will begin conversion to the limited Division XXI design in FY2000 with the 49th Armored Division and seven eSBs. These divisions will complete the conversion to the Division XXI design only after receiving the digital enablers and other modernization on which the design was based.

#### Fielding Essential Capabilities

Digitization improves effectiveness by enabling near real-time situational awareness, making it possible for soldiers to know their location, the enemy's location, and the location of other friendly forces. Inter-netted computers, linked to sensors and satellite-based navigation systems by robust communications networks, are the essential components of this capability. The Army is fielding a suite of command and control systems, selectively procuring weapons systems designed for the digitized battlefield, and integrating required digital components on fielded systems to tap the potential of digitization.



*The Global Combat Support System-Army provides logistical information and interface with the joint force.*

The Army Battle Command System (ABCS) is a system of systems that links automation assets, communications media, and operational elements to support commanders and their staffs in collecting and analyzing information, developing plans and orders, and monitoring the tactical battlefield. As the Army component of the Global Command and Control System (GCCS), ABCS enables transmission of information between Army and joint forces. It consists of complementary subsystems for various functional areas that together provide situational awareness of the battlefield. Some of the subsystems included in the ABCS are the Global Command and Control System-Army (GCCS-A), the Maneuver Control System (MCS), Force XXI Battle Command Brigade and Below (FBCB2), and the Combat Service Support Control System (CSSCS).

To support its transformation by

increasing strategic responsiveness, the Army will accelerate several logistical command and control systems. Within the ABCS, the system designated for acceleration is CSSCS. The CSSCS is an automated system for logistical, medical, financial, and personnel support to assist planning and decision-making. Three non-ABCS systems that enhance responsiveness are being accelerated as well. The Movement Tracking System (MTS) provides visibility of all cargo, enabling two-way communication and redirection of in-transit cargo. The Transportation Coordinator's Automated Information for Movement System II (TC-AIMS II) provides unit-level planners the ability to directly prepare and execute movement plans. The Global Combat Support System-Army (GCSS-A) provides data on supply, maintenance, repair parts, and other logistical information. It is the Army's interface

with the joint GCSS. The acceleration of these on-going programs will improve the strategic responsiveness that is key to implementing the Vision.

### Comanche

The Army seeks to continue development of the RAH-66 Comanche helicopter with the current funding profile and schedule. The Comanche will provide armed reconnaissance, rapid deployment, attack, and air-to-air combat capabilities. Fully digital, Comanche will be able to receive joint tactical and national asset data and imagery, as well as provide digital targeting data and imagery to other Army and joint digital systems. At the same time, it is compatible with other legacy systems. Its ability to engage targets at long range will enhance its survivability, and it is designed to operate without creating excessive logistical burdens. The Comanche helicopter is vital to Army modernization, and will provide a survivable, lethal, and deployable armed reconnaissance aircraft to meet critical battlefield deficiencies.

### Crusader

The Army is restructuring the Crusader program to gain its vital improvements in indirect fire support capability while reducing the overall weight of the system to improve its deployability. Crusader's vastly improved capabilities are essential to compensate for the reduced number of howitzers in the Division XXI design. Its range, rate of fire, ability to mass fire, accuracy, responsiveness, mobility, and survivability will increase the effectiveness and survivability of the entire force. The redesigned Crusader will be made lighter through increased use of titanium and changes to its suspension and powerplant. Further weight reduction comes from redesigning the configuration of support



*Comanche will give the Army a survivable, lethal, and deployable armed reconnaissance capability.*

vehicles for this system. While the original Crusader incorporated a tracked resupply vehicle for each howitzer, the redesigned system features one tracked and one wheeled resupply vehicle for every two howitzers. The Crusader's superior capabilities, combined with these changes to its design, will reduce the lift requirement for equivalent artillery support by 40 percent over the current self-propelled howitzer. Additionally, the Army will significantly reduce the procurement of Crusader to less than 500 in order to equip III Corps. Crusader is an important element in the Army's strategy to retain decisive capabilities during the transformation.

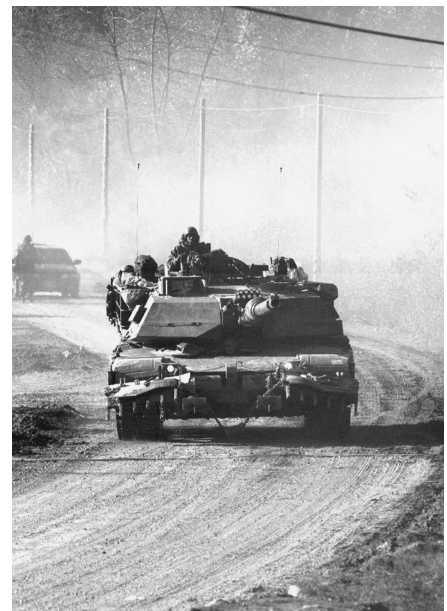
### Recapitalization

The Army must invest in the maintenance and upgrade of systems currently in both the AC and RC to sustain capabilities, reduce the cost of ownership, and extend the life of these legacy systems. Several ongoing

programs perform these functions for the M1-series tank, the workhorse of today's mechanized formations. Under the Abrams Integrated Management (AIM) XXI program, for instance, the depot and prime contractor provide rebuilds for M1A1 tanks, greatly improving their reliability. This program also reduces the costs of operating and supporting refurbished tanks. The Army intends to expand its recapitalization program to provide a new engine for Abrams tanks. The new engine is expected to reduce fuel consumption by about 30 percent while substantially increasing reliability. Abrams recapitalization supports the upgrade of tanks to M1A1D or M1A2 System Enhancement Program (SEP) configurations. These programs support implementation of the Vision by maintaining the lethality and reducing the logistics footprint of the legacy forces.

Since the technology to build a

lighter combat vehicle with the lethality and survivability of the Abrams family of tanks does not yet exist, the capabilities provided by digitized variants of the M1—the M1A2 (SEP) and M1A1D—will remain key components of readiness during much of the transformation. The improved capabilities of these systems drove the 25 percent reduction in combat vehicles featured in the Division XXI design. The M1A1D variant includes an enhanced Global Positioning System (GPS), an eye-safe laser range finder, and the FBCB2 computer. Initially, M1A2s were produced with a new turret, a 120mm main gun, protection from NBC weapons, Digital Electronics Architecture, a Position/Navigation System, improved armor, and improvements to the tank commander's thermal viewer and weapons station. Since August 1999, the M1A2s produced have incorporated SEP enhancements, including improved thermal sensors, Army Standard Force XXI software, digital maps, an



*The recapitalization of the Army's Abrams tanks is essential to preserve the decisive capabilities of the legacy forces during the transformation.*